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6. AUTHOR(S)
John Gimbel7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
University of Alaska
Department of Mathematical Sciences
Fairbanks, AK 99775-11108. PERFORMING ORGANIZATION
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A successful conference with 77 participants was held from Aug 13 - 16, 1990 in
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Report to AFOSR

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Title: Quo Vadis, Graph Theory? An Alaskan Conference on the Future
Directions of Graph Theory

Grantee: University of Alaska

Principal Investigator: John Gimbel

It is a pleasure to report on the conference Quo Vadis, Graph Theory which was held on the University of Alaska Fairbanks campus August 13-16, 1990. The conference had 77 participants. Forty three were American citizens. Four came from industry. Two from the US government. One from the Office of Naval Research as well as one from the Naval Postgraduate School. Other countries with representatives at the conference are Canada, Italy, Israel, Denmark, Rumania, South Africa, France, Germany, Poland, England and Hungary. One of the principal goals of the conference was to encourage active participation by women. In this, we were very successful; 20 women attended. Also, we wished to emphasize the importance of graph theory in education. In this we were very successful. Some interesting lectures were given and a very good discussion ensued which included some insightful remarks from some of our foreign participants on the educational techniques used in their countries. Also, we had many non-graph theorists participate, including many professors from the University of Alaska and a graduate student in math education from New York City.

Our principal lecturers include some of the foremost researchers in graph theory. These are: Paul Erdős, William Tutte, Dominic J.A. Welsh, Ronald Read, Tom Trotter, Margaret Cozzens, Clyde Monma, Alexandru Ballaban, Nathaniel Dean, Joseph Malkevitch, Michal Karonski, Edgar Palmer, and Béla Bollobás. All gave outstanding lectures.



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Principal Speakers

Combinatorial and Topological Methods

Paul Erdős, *Combinatorial Techniques and Major Problems*

William T. Tutte, *Studying the Birkhoff-Lewis Coloring Equations*

Dominic J. A. Welsh, *Graph Theory and Knots*

Algorithmic Graph Theory

Ronald C. Read, *Prospects for Graph Algorithms*

Tom Trotter, *On-Line Coloring of Graphs*

Applications

Margaret B. Cozzens, *Quo Vadis, Graph Theory- Practical Applications*

Clyde L. Monma, *Applications of Graphs in Communications Networks*

Alexandru T. Ballaban, *Solved and Unsolved Problems in Chemical Graph Theory*

Impact of Graph Theory on Education

Nathanial Dean, *Computers for Teaching and Learning about Graphs*

Joseph Malkevitch, *Graph Theory and Public Perceptions of Mathematics*

Random Graphs and Enumeration

Michal Karonski, *The Future Direction of Random Graphs*

Edgar M. Palmer, *Quo Vadis, Random Graph Theory?*

Summary

Béla Bollobás

Fred S. Roberts

William T. Tutte

Participant List

Brian B. Alspach	Simon Fraser University, Canada
Amos Altshuler	Ben Gurion University, Israel
Pat Andresen	University of Alaska Fairbanks, USA
Alexandru Balaban	The Polytechnic Institute, Rumania
Pat Andresen	University of Alaska Fairbanks, USA
Jørgen Bang-Jensen	University of Copenhagen, Denmark
Bruce Bauslaugh	Simon Fraser University, Canada
Gerhard Benadé	Rand Afrikaans Univ., South Africa
Dani Berend	Ben Gurion University, Israel
Jean-Claude Bermond	Informatique, CNRS, France
Katherine Block	Queens College, USA
Béla Bollobás	Cambridge University, England
Tom Brown	Simon Fraser University, Canada
Phyllis Z. Chinn	Humboldt State University, USA
Daniel I.A. Cohen	Hunter College, USA
Andrea M. Colbourn	Pace University, USA
Margaret B. Cozzens	Northeastern University, USA
Nathaniel Dean	Bellcore, USA
Paul Erdős	Hungarian Acad. of Science, Hungary
Ove Frank	University of Stockholm, Sweden
Marietjie Frick	Univ. of South Africa, South Africa
Daniel Gagliardi	I.B.M., Italy
Ron Gatterdam	University of Alaska Fairbanks, USA
Lucio Geronazzo	Universita Delgi, Italy
John Gimbel	University of Alaska Fairbanks, USA
Neal Glassman	A.F.O.S.R., USA
Luis Goddyn	Simon Fraser University, Canada
Erhard Godehardt	University of Dusseldorf, Germany
Hannibal Grubis	University of Alaska Fairbanks, USA
Ron Graham	Bell Labs, USA
Puhua Guan	Univ. of Puerto Rico, USA
Eleanor O'm Hare	Clemson University, USA
William Hare	Clemson University, USA
Kim A.S. Hefner	Naval Postgraduate School, USA
Katherine Heinrich	Simon Fraser University, Canada
Dushan Jevtic	University of Alaska Fairbanks, USA
John Kapenga	Caltech, USA

Almira Karabeg
Dino Karabeg
Michal Karonski
John W. Kennedy
Suh-ryung Kim
Pete Knoke
Clif Lando
Martin Lewinter
Marc Lipman
Joseph Malkevitch
Casimir Mally
Susan Marshall
William McCuaig
Clyde L. Monma
Edgar M. Palmer
Claudine Peyrat
Michael D. Plummer
Laura Lee Potrikus
Louis V. Quintas
Milan Randic
Ronald C. Read
Fred S. Roberts
Andrzej Rucinski
Olga Salizkiy
J. Schonheim
Sy Schuster
Karen Seyffarth
Vera Sós
Richard Steinberg
Henda C. Swart
William T. Trotter
William T. Tutte
Christine Virlouvet
Dominic J.A. Welsh
William F. Widulski
Paul A. Winter
Mary Wyatt
Min-Li Yu
Qinglin Yu
Cun-Quan Zhang

Oakland University, USA
Oakland University, USA
Adam Mickiewicz University, Poland
Pace University, USA
St. Johns University, USA
University of Alaska Fairbanks, USA
University of Alaska Fairbanks, USA
SUNY at Purchase, USA
Office of Naval Research, USA
York College, USA
CUNY, USA
Simon Fraser University, Canada
University of Victoria, Canada
Bellcore, USA
Michigan State University, USA
Informatique, CNRS, France
Vanderbilt University, USA
University of Alaska Fairbanks, USA
Pace University, USA
Drake University, USA
University of Waterloo, Canada
Rutgers University, USA
Adam Mickiewicz University, Poland
Hofstra University, USA
Tel Aviv University, Israel
Carleton College, USA
Simon Fraser University, Canada
Hungarian Acad. of Science, Hungary
AT&T Bell Laboratories, USA
University of Natal, South Africa
Arizona State University, USA
University of Waterloo, Canada
University of Paris, France
University of Oxford, England
Westchester Community College, USA
University of Natal, South Africa
University of Alaska Fairbanks, USA
Simon Fraser University, Canada
Simon Fraser University, Canada
West Virginia University, USA

Conference Directors

Five Mathematicians served together as codirectors. They are Phyllis Chinn, John Gimbel, John Kennedy, Louis Quintas and Fred Roberts. In addition, Ronald Graham acted as a conference consultant.

- Phyllis Z. Chinn is full professor of mathematics at Humboldt State University in Arcata, California. Phyllis has been involved with several conferences, including coordinator for the First West Coast Conference on Combinatorics, Graph Theory and Computing. Professor Chinn is active in the Association for Women in Mathematics. She has published a number of papers on research mathematics and teaching.
- John G. Gimbel is an associate professor of mathematics at The University of Alaska Fairbanks. He is the principal investigator of this grant.
- Ronald L. Graham is director of the mathematics division of AT&T Bell Labs in Murray Hill, New Jersey. Ronald is a graduate of the University of Alaska Fairbanks and further received an honorary doctorate from the university in 1988. Ronald concurrently served as conference codirector of the International Congress of Mathematicians held in Japan during the Summer of 1990.
- John W. Kennedy is full professor in the Mathematics Department at Pace University, New York City. John has a background in both mathematics and physical chemistry.
- Louis V. Quintas is full professor in the Mathematics Department at Pace University. Louis served on the organizing committee for the First China-USA Conference on Graph Theory, held in Jinan, China during the Summer of 1986 and was co-chair of several International Combinatorial Mathematics conferences sponsored by the New York Academy of Sciences.
- Fred S. Roberts is a mathematician at RUTCOR and full professor of mathematics at Rutgers University. He has acted as organizer of 17 scientific meetings, including the SIAM 25th anniversary meeting and three SIAM conferences on discrete math. Fred is the author of four books on applied mathematics, including the classic *Discrete Mathematical Models*. Fred has a deep knowledge of practical applications of graph theory.

Addresses & Phone Numbers

- | | |
|---|--|
| (1) Phyllis Z. Chinn
Department of Mathematics
Humboldt State University
Arcata, CA 95521

(707) 826-4131 | (2) John G. Gimbel
Mathematical Sciences
University of Alaska
Fairbanks, AK 99775-1110

(907) 474-6102 |
| (3) Ronald L. Graham
AT&T Bell Labs
Math Science Research Center
Room 2C-282
600 Mountain Avenue
Murray Hill, NJ 07974

(201) 582-4696 | (4) John W. Kennedy
Mathematics Department
Pace University
Pace Plaza
New York, NY 10038

(212) 488-1786 |
| (5) Louis V. Quintas
Mathematics Department
Pace University
Pace Plaza
New York, NY 10038

(212) 488-1200 | (6) Fred S. Roberts
Math Department
Rutgers University
New Brunswick, NJ 08903

(201) 932-2365 |